

Chapter 3—Alternatives

The purpose of this chapter is to describe the management alternatives considered for the Cokeville Meadows Refuge as part of the CCP planning process. Alternatives are different approaches to management that are designed to achieve the refuge purposes, vision, and goals; the mission of the Refuge System; and the mission of the U.S. Fish and Wildlife Service. We develop alternatives to address the key issues, concerns, and problems identified by during public scoping and throughout the development of the draft CCP.

Below is described our method for developing alternatives, elements common to all alternatives, and the actions of each alternative. Details on the effects of each alternative may be found in chapter 5, while a summary table that compares both the actions and the effects of each alternative may be found at the end of this chapter.

3.1 ALTERNATIVES DEVELOPMENT

Our planning team assessed the planning issues identified in chapter 2, existing biological conditions on the refuge, and external relationships that affect the refuge to develop a range of alternatives. Each alternative presents different approaches for fulfilling the refuge's purposes and the mission of the Refuge System mission while also incorporating actions intended to achieve refuge goals, as outlined in chapter 2.

3.2 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED

We did not consider any alternatives other than the four that are described in this chapter.

3.3 ELEMENTS COMMON TO ALL ALTERNATIVES

All of the alternatives contain these same, key actions:

- Emphasize priority wildlife species, namely:
 - for wet meadow and wetland habitats:
 - trumpeter swan, Canada goose, redhead, greater sandhill crane, white-faced ibis, Forster's tern, black tern, common yellowthroat, American bittern, and sora rail;
 - for shrub-steppe upland habitats:
 - short-eared owl, mountain plover, horned lark, greater sage-grouse, sage thrasher, Brewer's sparrow, sage sparrow, ferruginous hawk, golden eagle, prairie falcon, mourning dove, western burrowing owl, common nighthawk, and Brewer's blackbird;
 - for riparian and riverine habitats:
 - white-faced ibis, yellow warbler, willow flycatcher, song sparrow, northern leopard frog.
- Comply with all Federal laws and regulations that provide direction for managing units of the Refuge System.
- Develop a comprehensive stepdown IPM plan to handle pests that might affect wildlife habitats or human health, like mosquitoes, in a safe manner. Include monitoring protocols in the IPM and define treatment thresholds for issues or threats to human health and safety. Consider other organisms that could be considered pests but are not threats to human health and safety, like grasshoppers and crickets, in the same IPM. Try to control invasive species with an IPM approach using the right combination of biological, chemical,

and mechanical treatments. Decide if a proposed treatment, like pesticide use, is compatible per our policy and process a pesticide use permit for chemical treatments that are found to be appropriate and compatible for application on the refuge before they are used in the field.

- Improve water quality within the wet meadow habitats through carp control and management. This would include drying temporary and seasonally flooded areas every year. May lower water levels in semipermanently flooded units to prevent carp from overwintering in them.
- Protect endangered species, including candidate species.
- Refrain from affecting adjacent landowners with an activity without first getting their approval.
- Suppress all unplanned fire ignitions on the refuge through agreements with cooperating agencies, including the BLM High Desert District and Lincoln County, which will be supported throughout the life of the CCP. Update the refuge fire management plan (FMP) to reflect the goals and objectives of the CCP.
- If the draft hunt plan and EA released in December 2012 is approved, open the refuge to big game, small game, and migratory bird hunting.
- Do not authorize shed antler hunting because we have found it to be “not appropriate” (see appendix A). Conduct appropriateness and compatibility determinations on other requested recreational activities that are not wildlife dependent as well as on those that are considered to be economic activities (NWRSA, 50 CFR 25.21).
- Protect and manage all cultural resources. Consult with Wyoming State Historic Preservation Office before approving disturbances.
- With help from the WGFD, conduct monitoring programs for several species of wildlife. Cooperate directly with the Lincoln County Weed and Pest Department to monitor weed infestations. Conduct all necessary monitoring programs on refuge lands, using the aid of partners when needed.
- Manage the refuge as an integral part of the Seedskafee National Wildlife Refuge Complex and make staff, equipment, and money allocated to Seedskafee National Wildlife Refuge available to Cokeville Meadows Refuge.
- Work with local landowners to support and improve the BQ and Pixley Dams. Seek to buy and replace the Pixley Dam with a safer and more efficient structure that allows for fish passage.
- Make it a high priority to remove junk and debris from the refuge.
- Protect key habitats in the area of the refuge by entering into voluntary agreements with partners and by buying the surface and subsurface rights, where proper and when available within the refuge’s acquisition boundary, to land through fee title or conservation easements.
- Protect refuge infrastructure, habitats, plants and wildlife from mineral and energy development and transportation. Seek to withdraw some of the mineral rights from the public domain from lands within the refuge’s acquisition boundary that are now managed by the BLM.
- Address nuisance animals and predators causing depredations or property damage to neighboring landowners on a case-by-case basis according to our regional policy (see appendix G). Do not authorize prophylactic predator controls in the absence of documented depredation and aerial gunning of predators on the refuge.
- Operate a small volunteers program at the refuge; emphasize increasing the number of volunteer employees involved in wildlife inventory, maintenance, and public use programs.

- Engage in partnerships with local, State, and Federal agencies, nongovernment organizations, local landowners, cooperators, private corporations and others.
- Keep identified water rights in good standing with the Wyoming State Engineers Office. With the help of Region 6's Water Resources Division, develop a management plan that would fully define and quantify refuge water rights and how they relate to Wyoming water law, the Bear River Compact, and the private water rights of adjacent landowners.
- Allow opportunistic and targeted research, when compatible with the purposes for which the refuge was established and the mission of the Refuge System, to meet refuge goals and objectives.

3.4 DESCRIPTION OF ALTERNATIVES

The following summarizes the alternatives considered by the planning team to achieve the vision and goals and to address the planning issues for Cokeville Meadows Refuge. These alternatives include not only current management actions, as described in alternative A, but also our planning team's proposed actions found in alternative D and further described in chapter 6.

Alternative A, No Action

Under this alternative, refuge management programs would not change significantly unless funds and staff also increased. Irrigation, haying, and grazing would continue at, or near, current levels.

Under the no-action alternative, the refuge would remain closed to most public uses, though, because the process to open the refuge to hunting began before the public release of this draft CCP, the refuge may open hunting, pending approval of the hunt plan. However, the refuge would not be opened to fishing, and opportunities for wildlife observation and photography would still be limited to the area around the visitor contact station on U.S. Highway 30 at Netherly Slough.

Additional partnership programs would be developed only if time and money were available at current staff levels.

This alternative might not meet all the CCP goals. It serves, however, as a baseline to which other alternatives may be compared.

Habitat and Wildlife Management

Actions for three specific habitat types are proposed as well as for combatting wildlife diseases, crop depredation, and private property damage.

Wet Meadow Habitat

The high wildlife value of the wet meadows of the Bear River Valley is one of the primary reasons for which Cokeville Meadows Refuge was established. We would continue to support and run irrigation infrastructure and to flood to manage water levels in constructed ponds and natural wet meadow habitats to enhance nesting, brood-rearing, foraging and escape cover for migratory birds and other wildlife. We would also continue to replace failed water control facilities as needed and work closely with neighbors and cooperative farming and grazing permittees to manage wet meadows for wildlife. The current water management regime would continue, which has extended hydroperiods through artificial flooding regimes and allowed creeping meadow foxtail to dominate wet meadows.

The annual haying and grazing of wet meadow habitats would continue. Haying would take place in the fall every year after irrigation water is removed and meadows dry enough to support haying equipment. Because of the high water table, not all meadows would be hayed annually, and cattle grazing would be used to reduce biomass and to support the vigor of wet meadow vegetation.

We would casually observe and note instances where salt crusts or coats soils and plants, which would show that salt loading may be affecting refuge habitats.

Prescribed fire would not be used on wet meadows.

Upland Habitat

Native uplands on Cokeville Meadows Refuge would continue to receive little active management. Many of the upland sage habitats were converted to irrigated croplands before refuge acquisition. Prior plans to restore approximately 660 acres of such cropland back to native grassland vegetation would continue in cooperation with permittees, WGFD and the Wyoming Landscape Conservation Initiative. To prepare these sites for native grass seedings, they would be farmed in small grain for several years. This would reduce the weed seed bank and provide food for waterfowl and cranes, which may reduce the crop depredation of nearby landowners.

Several acres we acquired in the northern part of the acquisition boundary produced alfalfa. We would allow some of these lands to continue to produce alfalfa as part of the Cooperative Farming program. The uplands under an existing center pivot irrigation systems would be converted out of alfalfa and back to native grasslands or shrublands, and portions of the field may be planted to small grain to provide high-energy food for migrating waterfowl.

We would continue to monitor historical sage-grouse lek sites, including a potential, but unconfirmed, lek site on the west side of the refuge next to the Etchevery tract.

Riparian and River Habitats

The vegetative community in riparian and river habitats has changed from a variety of wetland plants to one that is beneficial to domestic livestock and which thrives on irrigation, haying, and grazing practices that have been in place in the valley for decades and which would continue under this alternative. In many places, the riparian zone would continue to be hayed to the edge of the river, which would preclude the reestablishment of willows and cottonwood species. No restoration of native riparian habitat would be anticipated, and no new water quality monitoring programs would be started.

With regard to grazing, no action would be taken on prior discussions with permittees and WGFD to fence cattle out of the riparian corridor, and permittees would continue to graze cattle in the riparian area.

Water would continue to be diverted from the river into floodplain meadows and grasslands through a system of ditches, dikes and water control structures. Dikes built in riparian areas along the river would continue to prevent surface flows from returning to the river in some areas. Water would also be pumped from the river to irrigate crops such as alfalfa and small grains by center pivot irrigation systems. Ground water wells for irrigation would be expected to continue to reduce ground water contributions to instream flows.

Wildlife Disease and Crop Depredation and Damage to Private Property

We would work with WGFD to reduce the comingling of elk and livestock. In rare cases, wintering elk would be hazed from private and refuge lands. We expect that an elk hunting program will be established, perhaps for the 2013 hunting season, and that we would administer the hunt in cooperation with WGFD.

We would work with permittees to plant a small grain crop on the refuge to help offset depredation on nearby private lands.

Invasive Species

We would focus on resources within the refuge acquisition boundary.

Species of Concern

We would conduct opportunistic monitoring of sage-grouse distribution and use in refuge habitats, as well as that of other State and Federal species of concern and would work with conservation partners to develop conservation measures for populations of aquatic and land species of concern.

Wildland Fire Management

There would be no prescribed fire program at Cokeville Meadows Refuge.

Visitor Services and Cultural Resources

Authorized public uses would include environmental education, interpretation, wildlife observation, and photography at a visitor contact station, information kiosk, and walking trail at the Netherly Slough along U.S. Highway 30 and at the refuge headquarters. Vehicle access to the refuge would be by special permit only, and there would be no public access to the Bear River for boating. No efforts would be made to improve roads or railroad crossing safety.

Public information would be available at the refuge office and at the Seedska-dee National Wildlife Refuge office. A refuge brochure with general information would be developed, but some information about the refuge would only be available at Seedska-dee National Wildlife Refuge's Web site by clicking on the Cokeville Meadows Refuge link (<http://www.fws.gov/seedska-dee/cokevillemeadows.htm>).

Partnerships

We will continue to work with our Partners for Fish and Wildlife Program, WGFD, Wyoming Landscape Conservation Initiative, Lincoln County, neighboring landowners, and others to conserve wildlife and wildlife habitat both on and off the refuge. Efforts will be limited, however, by the availability of resources and our lack of refuge staff.

We would continue to work with third-party researchers to allow them to obtain information about wildlife and habitats on the refuge in the name of conservation and conservation research.

We would engage with project proponents, third-party mineral owners, local units of government, and regulatory or permitting agencies about proposed mineral developments and utility and transportation corridor projects that have the potential to affect refuge resources and Federal trust wildlife resources.

Landscape Conservation

With no staff on site, we would focus on habitat and wildlife conservation activities within the refuge boundary and not across the broader landscape of the Bear River watershed.

Refuge Development and Operations

Cokeville Meadows Refuge would continue to be unmanned. Seasonal temporary staff, interns and volunteers may be employed during the summer months to help with biological, maintenance, and public use duties. Administrative support, skilled trades' maintenance work, including heavy equipment operation, and law enforcement would be provided by the staff at Seedska-dee National Wildlife Refuge and our regional business team.

Repairing the nonfunctioning wet meadow irrigation system would continue and would include rebuilding dikes, replacing water control structures, and cleaning water delivery canals as necessary and as money allows. We would also run the water control and irrigation system and record our water usage as necessary to keep the refuge's surface water rights in good standing with the Wyoming State Engineer's Office.

As money allows, we would demolish and remove four old buildings that are of no use to the refuge during the life of the CCP and rehabilitate larger production ground water wells and put them back into use. Small, domestic-type ground water wells associated with former farmsteads would be abandoned per State regulations.

Inventory, Monitoring, and Research

Biological monitoring would be limited and would be provided mostly by cooperators and partners. Limited wildlife population monitoring would continue to be conducted by employees of WGFD. We would cooperate with, and provide access to, WGFD to conduct surveys, including those for fish in the Bear River between the BQ and Pixley Dams, American bittern, colonial-nesting birds, and those supporting herpetology.

No new biological monitoring programs would be started by our refuge staff, including new programs to monitor water quality in the mainstem of the Bear River.

Alternative B, Maximum Restoration

Under this alternative, we would restore habitats as much as possible, even though upstream impoundments on the Bear River, the water rights of other landowners in the valley, and the fact that the refuge shares irrigation infrastructure with its neighbors would make it impossible to restore refuge wet meadows to pre-settlement conditions. We would consider the removal of dikes, water control structures and irrigation infrastructure as per the refuge's HGM report (Heitmeyer, M., Artmann, M., and Fredrickson, L., 2010). Wet meadow irrigation would follow historical flood patterns and come from overbank flooding from the river rather than from irrigation diversions.

Management activities like haying and grazing would be used to keep habitats productive, and nonnative agricultural crops would be limited or used as a tool to establish native habitats. Compatible wildlife-dependent recreation and public access to the refuge would be significantly expanded.

Habitat and Wildlife Management

Actions for three specific habitat types are proposed as well as for combatting wildlife diseases, crop depredation, and private property damage.

Wet Meadow Habitat

We would use the refuge's HGM analysis to find and remove infrastructure, including water control structures, irrigation ditches, dikes, and levees that would not affect our neighbors' water rights. We would restore natural flooding regimes as much as possible. Some portions of the meadows would only receive flooding from natural over-bank flooding from the mainstem of the Bear River during natural flood pulses in years of high runoff.

We expect that by restoring drying cycles to the meadows, sedge, rush, and bulrush communities would be able to compete better with creeping meadow foxtail, resulting in a more diverse habitat mosaic. As native vegetation replaces creeping meadow foxtail, a habitat management plan would be developed based on our best available science and monitoring.

Haying and grazing by refuge cooperative farmers would continue, but they would be more prescriptive than in the past and adaptive management would be used to find out when to apply them to improve habitat for targeted wildlife species.

We would casually observe and note instances where salt incrustations occur on soils and plants as indications that salt loading may be affecting refuge habitats.

Prescribed fire could be used as a habitat management tool.

Upland Habitat

Same as alternative A, except that besides restoring native grasslands we would also restore sagebrush-steppe plant communities on suitable sites. Our center pivot irrigation system would be removed and the lands under the pivot would be restored to a native sagebrush community.

Riparian and River Habitats

We would work toward returning natural processes to the Bear River. To do this, we would engage our partners to help us restore native game and nongame fish populations with an emphasis on Bonneville cutthroat trout, which is a species of concern, and to improve fish passage, which is affected by the BQ and Pixley Dams.

We would manage riparian vegetation to optimize habitat for migratory birds and to restore the diversity of plant species while focusing on native grasses, sedges, rushes, and woody species like willow and cottonwood. The riparian corridor would be fenced off and rested from haying and livestock grazing to promote the regeneration of native woody vegetation.

Wildlife Disease and Crop Depredation and Damage to Private Property

Same as alternative A.

Invasive Species

Same as alternative A.

Species of Concern

Same as alternative A.

Wildland Fire Management

The refuge FMP would be revised to allow the use of prescribed fire as a refuge habitat management tool, as reflected in the goals and objectives of this CCP.

Visitor Services and Cultural Resources

Public uses of and access to the refuge would be significantly expanded from alternative A (figure 9).

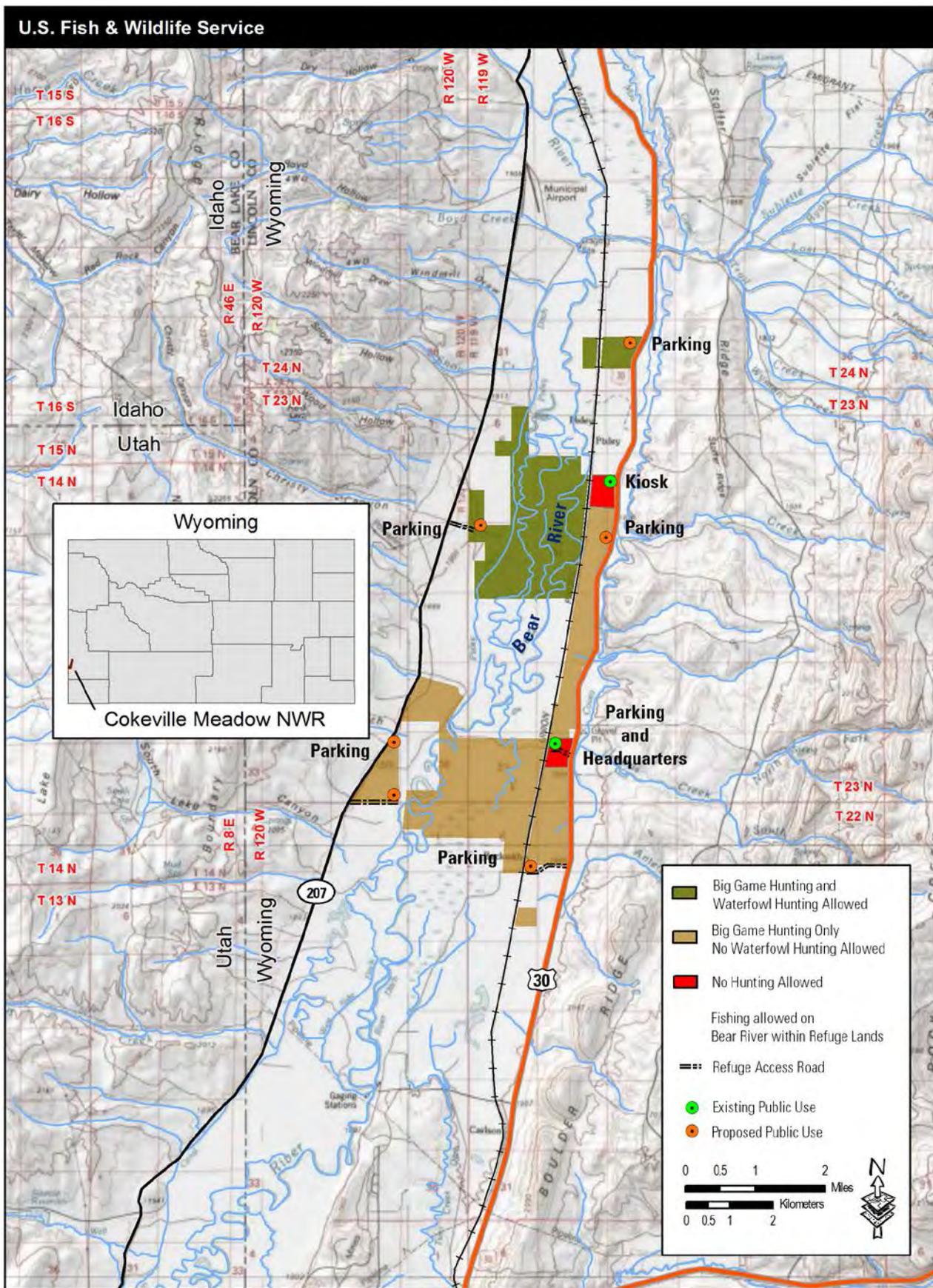


Figure 9. Proposed public uses at Cokeville Meadows National Wildlife Refuge, Wyoming.

Besides opening the refuge to hunting, more areas would be opened for wildlife observation and photography. A fishing plan would be written and a formal rulemaking process would follow to open portions of the Bear River to public sportfishing. Fishing would be generally conducted pursuant to State regulations, but there may be seasonal closures and spatial zoning to reduce or prevent disturbances to migratory birds during the nesting season.

Nonmotorized boating in the refuge portions of the Bear River would be allowed seasonally for fishing and wildlife observation opportunities. Canoe slips would be developed for seasonal, nonmotorized boating to provide fishing, wildlife observation, and photography access on the Bear River. The development of nonmotorized launch and take out sites would be dependent on cooperative agreements with WGFD, local governments, and cooperating landowners.

We would, in cooperation with WGFD and in accordance with State regulations and their calendar, allow a regulated trapping program on the refuge. The refuge would issue one annual trapping permit for the refuge, with the permittee selection process handled by WGFD. State-designated furbearers such as mink, muskrat, beaver, weasel, badgers and bobcats, as well as state-designated predators like coyote, red fox, skunks and raccoons, would be harvested under state regulations.

Increased public use under this alternative would require more infrastructure to provide safe access to newly opened areas. We would develop at least one vehicle access point or parking area on both the east and west sides of the refuge. We would work with the right State and local government agencies and the railroad company to fund and provide a signaled crossing to provide safe access to the east side of the refuge from U.S. Highway 30.

The availability of public information would be expanded from alternative A. We would develop brochures, including a general refuge brochure, and a hunting and fishing regulations leaflet.

Partnerships

Same as alternative A.

Landscape Conservation

Same as alternative A.

Refuge Development and Operations

Additional staff would be required. Besides a wildlife refuge specialist position, one full-time biological technician and one career seasonal (six month) biological technician would be added to the staff to conduct the added biological monitoring and facility maintenance and management that will be required to implement this alternative.

Existing infrastructure would be supported except for the refuge's water delivery system, which would be removed.

At least two safe access points and parking facilities, one on the east and one on the west side of the refuge, would be added for refuge visitors. Canoe slips and launch and take out sites for non-motorized boats would also be added to facilitate compatible, wildlife-dependent uses

Inventory, Monitoring, and Research

Our biological monitoring program at the refuge would be much more extensive than under alternative A. Besides the monitoring of wildlife populations—including big game, American bitterns, colonial nesting birds, sage-grouse, amphibians, and fish—that is carried out by WGFD, we would include the development of a habitat management plan and an inventory and monitoring plan.

The stepdown inventory and monitoring plan, when approved, will include the monitoring of water quality in the Bear River and associated wetlands, of wet meadow and riparian corridor vegetation to help us in making decisions about our haying and grazing activities, and of targeted wildlife species. Monitoring programs for invasive species would be expanded to include both plant and animal aquatic species.

Monitoring programs would also assess water quality, including temperature, dissolved oxygen levels, sedimentation load, and other baseline information to find issues that exist upstream from, and in the area of, the refuge that are potentially affecting aquatic species. Would expand the invasive species monitoring partnership with Lincoln County Weed and Pest Department to include aquatic invasive species.

Alternative C, Resource Enhancement

Under this alternative, we would strive to enhance the productivity of refuge habitats for targeted wildlife species. Restoring natural processes would occur, but this would be of a lower priority than would be maximizing populations of migratory birds, sage-grouse and native fishes and amphibians.

Economic uses on Cokeville Meadows Refuge, such as haying and grazing, would be more prescriptive than they would be under alternative A, and they would be specifically targeted to achieve wildlife population objectives. There would be more wildlife population management actions under this alternative.

As under alternative B, public opportunities for wildlife-dependent recreation and access would be expanded significantly, but there would be more emphasis on developing infrastructure to facilitate public use.

Habitat and Wildlife Management

This alternative proposes actions for three specific habitats and for wildlife diseases, crop depredation, and private property damage.

Wet Meadow Habitat

Management would be similar to that described for alternative B, except it is likely that less water management infrastructure would be removed and there would be more intensive water management to create optimum habitat conditions for specific targeted wildlife. The refuge's HGM analysis would be used to find fewer water control structures, ditches, dikes, and levees for removal. These would be removed only if it would create better habitat for migratory birds. Furthermore, some new water management infrastructure would be installed to provide greater ability to manage water for targeted wildlife.

We would emphasize restoration to presettlement conditions less and restoration to achieve specific wildlife objectives more. Drying cycles to promote native vegetation would be prescriptive, rather than natural, and flooding would occur in years when there would be no overbank flooding from the Bear River. A robust monitoring program would be required to manage a highly manipulated system adaptively without negatively affecting neighboring landowners and their water rights.

Haying and grazing would continue, but would be more prescriptive, designed to achieve a particular habitat and wildlife outcome, than under alternative A. We would expand the use of prescribed fire, when it would provide the greatest enhancement to habitats.

Unlike under alternatives A and B, we would actively manage medium-sized predators during the spring. Refuge staff or cooperators and permittees would actively trap and remove skunks and raccoons in wet meadow habitats from February to April to enhance the nest success of migratory birds.

Upland Habitat

Same as alternative B, except that the center pivot irrigation system would not be removed. Rather, the area under the pivot would continue to be irrigated but managed more intensively to provide small grains to provide high energy foods for migrating cranes and waterfowl and to provide nesting cover for upland nesting waterfowl.

Haying and grazing would be more prescriptive than under alternatives A and B.

Riparian and River Habitats

Same as alternative B, except water control structures, dikes, and irrigation infrastructure, including the BQ and Pixley Dams, would be evaluated for replacement and upgrades to include fish passage to promote native fish diversity. We would also, in partnership with others, actively plant native woody species in the riparian corridor. Fencing the riparian corridor in would be expanded to include exclosures to prevent the browsing of woody vegetation by native wild ungulates and stock fencing to keep livestock out of the riparian area.

Wildlife Disease and Crop Depredation and Private Property Damage

Same as alternative A, except that we would work with cooperative farmers to keep half of the acreage under the center pivot irrigation system in small grain production to provide high energy food on the refuge each year migrating cranes and waterfowl to help reduce depredation on nearby private farms.

Invasive Species

Same as alternative A.

Species of Concern

Same as alternative A, plus we would collaborate with WGFD to increase the monitoring of other State species of greatest conservation need within the refuge.

Wildland Fire Management

Same as alternative B.

Visitor Services and Cultural Resources

Same as alternative B, except that there would be more infrastructure development to facilitate wildlife-dependent recreation. A stepdown visitor services plan would be prepared to evaluate the feasibility and locations for an auto tour route, an interpretive foot trail along the Bear River, a photography blind, and an outdoor classroom facility for elementary and secondary school environmental education. In addition, we would provide some limited staff-lead interpretive and environmental education programming.

Partnerships

Same as alternative A.

Landscape Conservation

Same as alternative A.

Refuge Development and Operations

Same as alternative A, except staff needs would be the same as alternative B and more infrastructure would be added.

Inventory, Monitoring, and Research

Same as alternative B.

Alternative D, Proposed Action: Landscape-level Management

Under this alternative, management would strive to improve refuge resources and development within a greater landscape footprint by using the help of partners to increase wildlife and habitat productivity within, and outside of, the refuge boundary.

Wet meadow and upland habitats would be managed and restored to increase wildlife productivity and diversity. The use of agricultural practices would be specifically geared to enhance refuge habitats for wildlife both on and off refuge lands. Visitor resources, access, and opportunities for wildlife-dependent uses would be developed to encourage a greater understanding and appreciation of the Bear River watershed and its wet meadow, riparian, and stream habitats and wildlife.

Habitat and Wildlife Management

This alternative proposes actions for three specific habitats as well as for combatting wildlife diseases, crop depredation, and private property damage.

Wet Meadow Habitat

Same as alternative C, plus we would seek broad partnerships to improve habitat for wildlife on private and other public lands within the Bear River watershed in Wyoming.

Upland Habitat

Same as alternative C, plus we would seek broad partnerships to improve habitat for wildlife on private and other public lands within the Bear River watershed in Wyoming.

Riparian and River Habitats

Same as alternative C, plus we would seek broad partnerships to improve riparian and river habitats for native fish and wildlife within the Bear River watershed in Wyoming.

Wildlife Disease and Crop Depredation and Private Property Damage

Same as alternative A, plus we would facilitate the increased movement and migration of wildlife between the refuge and other sites throughout the landscape to help ward against crop depredation and property damage.

Invasive Species

Same as alternative A, plus, through partnerships, we would increase monitoring and rapid response for new infestations within the refuge and throughout the Bear River watershed in Wyoming.

Species of Concern

Same as alternative C, plus we would work with existing and new partners and conservation agencies to increase monitoring, and to develop conservation strategies for species of concern throughout the Bear River watershed in Wyoming.

Wildland Fire Management

Same as alternative B plus we would seek to collaborate with the State of Wyoming, other Federal agencies, and partners to accomplish fuels treatment goals in the watershed within Wyoming.

Visitor Services and Cultural Resources

Same as alternative C. In addition, we would develop partnerships with neighbors and cooperators, WGFD, nongovernment organizations, schools, and local governments to facilitate wildlife-dependent recreational opportunities in the Wyoming part of the Bear River watershed.

A significant effort would be made to develop more ecotourism activities in the area around Cokeville Meadows Refuge. These might include a regional interpretive tour route in the Bear River Valley of Wyoming and a regional birding trail. We would work with the town of Cokeville, Lincoln County, and others to move the annual Wyoming State junior duck stamp competition to Cokeville.

Partnerships

Same as alternative A, but expand efforts significantly to focus not only on lands under our ownership or under conservation easements but also on the connectivity of water and wildlife across multiple ownerships and jurisdictions within the valley.

While we cannot put aside our administrative responsibilities at Cokeville Meadows Refuge—those directed by Congress in the Improvement Act—this alternative would forge a more collaborative management regime where neighbors, other Federal agencies, State agencies, and local governments are intimately involved in project planning and where our decisions are made in a collaborative fashion through the continuous involvement of partners.

We would seek partners in the private sector to establish a refuge Friends group that would support landscape conservation on public and private lands.

Landscape Conservation

We would coordinate with local governments and agencies to see if any private land development proposals might affect refuge, and other, habitats of high value for wildlife throughout the Bear River watershed in Wyoming.

We would add a new, on-staff, extension biologist whose responsibilities would be to plan and carry out conservation actions to conserve wildlife across the landscape and to leverage the expertise and resources of all levels of government and the private sector to achieve landscape conservation. This would clearly fit the goals of the Bear River Watershed Conservation Area project.

Refuge Development and Operations

Same as alternative C, except an extension biologist would be added to work with cooperators and partners on projects such as an interpretive tour route and a regional birding trail in the Bear River watershed in Wyoming.

Inventory, Monitoring, and Research

Same as alternative B, except that biological monitoring of water quality issues would be expanded through partnerships to include the entire Bear River watershed in Wyoming.

3.5 COMPARISON OF ALTERNATIVES AND CONSEQUENCES

Table 4 offers an abbreviated comparison of the actions and environmental consequences of the four alternatives.

Table 4. Summary of the alternatives and their environmental consequences for the comprehensive conservation plan for the Cokeville Meadows National Wildlife Refuge, Wyoming

<i>Alternative A</i> <i>(current management, no action)</i>	<i>Alternative B</i> <i>(hydrology and habitat restoration)</i>	<i>Alternative C</i> <i>(resource enhancement)</i>	<i>Alternative D</i> <i>(landscape-level management)</i>
Habitat and Wildlife Management			
Wildlife diseases—actions			
Work with WGFD to reduce comingling of elk and livestock. Haze elk in rare cases. Establish elk hunt plan.	Same as alternative A .	Same as alternative A.	Same as alternative A, plus facilitate increased movement and migration of wildlife between the refuge and other sites throughout the landscape.
Wildlife diseases —environmental consequences			
Minimizing the comingling of elk and livestock will diminish the chances of transmitting wildlife diseases.	Same as alternative A.	Same as alternative A.	Same as alternative A, but risk of transmitting diseases to livestock would be further reduced.
Crop depredation and property damage—actions			
We would continue to plant small grain crops on refuge lands, which are generally consumed by migratory birds and large ungulates, to prepare the cultivated sites to be restored to grasslands.	Same as alternative A.	Same as alternative A, except that we would work with cooperative farmers to keep half of the acreage under the center pivot irrigation system in small grain production.	Same as alternative A, plus facilitate increased movement and migration of wildlife between the refuge and other sites throughout the landscape.
Crop depredation and property damage—environmental consequences			
Waterfowl and large ungulate depredation of private property in lands next to the refuge would be reduced. Restored grasslands would provide required wildlife food sources in enough abundance to reduce crop damage.	Same as alternative A.	Same as alternative A.	Same as alternative A plus wildlife would be able to find adequate food and rest sites, which would further reduce the likelihood of crop depredation and property damage.

Table 4. Summary of the alternatives and their environmental consequences for the comprehensive conservation plan for the Cokeville Meadows National Wildlife Refuge, Wyoming

<i>Alternative A</i> (current management, no action)	<i>Alternative B</i> (hydrology and habitat restoration)	<i>Alternative C</i> (resource enhancement)	<i>Alternative D</i> (landscape-level management)
Invasive species—actions			
Work with county agencies, cooperators, and neighbors to control invasive plant species on refuge lands. Coordinate monitoring actions with WGFD to ascertain if aquatic invasive species are present in the Bear River and support nonnative control programs. Conduct carp control. Develop a stepdown IPM plan.	Same as alternative A.	Same as alternative A.	Same as alternative A, plus, through partnerships, increase monitoring and rapid response for new infestations, within the refuge and throughout the Bear River watershed in Wyoming.
Invasive species—environmental consequences			
Would contain invasive plant species infestations. Could help prevent or slow the establishment of carp, zebra and quagga mussels in Bear River habitats in the refuge and elsewhere.	Same as alternative A.	Same as alternative A.	Same as alternative A.
Species of concern—actions			
Conduct opportunistic monitoring of sage-grouse distribution and use in refuge habitats, as well as that of other State and Federal species of concern. The staff would work with conservation partners to develop conservation measures for populations of aquatic and land species of concern.	Same as alternative A.	Same as alternative A, plus collaborate with WGFD to increase monitoring within the refuge of other State species of greatest conservation need.	Same as alternative C, plus work with existing and new partners, and conservation agencies to increase monitoring, and develop conservation strategies for species of concern throughout the Bear River watershed in Wyoming.
Species of concern—environmental consequences			
Would help prevent Federal listing under the ESA, contribute toward species recoveries, and help the State in their management efforts.	Same as alternative A.	Same as alternative A.	Same as alternative A.

Table 4. Summary of the alternatives and their environmental consequences for the comprehensive conservation plan for the Cokeville Meadows National Wildlife Refuge, Wyoming

<i>Alternative A (current management, no action)</i>	<i>Alternative B (hydrology and habitat restoration)</i>	<i>Alternative C (resource enhancement)</i>	<i>Alternative D (landscape-level management)</i>
<p>Habitat and Wildlife Management: Wet Meadow Habitat and Wildlife Goal—Using the best scientific practices to manage and preserve critical wet meadow habitat, the refuge will provide quality feeding, loafing, and breeding opportunities for a diversity of migratory birds and resident wildlife.</p>			
<p>Wet meadows habitat—actions</p>			
<p>Irrigate and flood wet meadows to support constructed ponds and natural wetlands.</p> <p>Upgrade water control infrastructure to improve habitat hydrologic functions.</p> <p>Rely primarily on grazing and haying as habitat management and invasive plant species control tools.</p> <p>Casually observe and note instances where salt incrustations occur on soils and plants within the refuge boundary.</p>	<p>Remove water control, diversion, and irrigation structures in an attempt to restore, to the greatest extent possible, the natural hydrologic cycle of the wet meadows in the refuge.</p> <p>Grazing, haying, and prescribed fire would be the most likely habitat management actions.</p> <p>Casually observe and note instances of salt incrustations on soils and plants within the refuge boundary.</p>	<p>Same as alternative B, but would update and use the water diversion, control, and irrigation infrastructure to try to mimic some of the natural hydrologic cycle and water flows in a way to provide better habitat conditions for migratory birds, aquatic species, and resident wildlife.</p> <p>Strive to enhance productivity of wet meadows and wetlands for targeted wildlife species.</p> <p>Manage mesopredators.</p>	<p>Same as alternative C, but would expand existing, and seek new, partnerships to improve habitat for wildlife on private and other public lands within the Bear River watershed in Wyoming.</p>
<p>Wet meadows habitat—environmental consequences</p>			
<p>Would support wet meadow and wetland areas conducive to a variety of migratory and resident wildlife.</p> <p>Would support a relatively low vegetative diversity as creeping meadow foxtail will continue outcompeting other native plant species, which in turn will impede a greater variety of wildlife.</p>	<p>Could decrease the extent of wet meadow habitats and their types and availability, which would change the use by, and variety of, aquatic, resident, and migratory bird species.</p> <p>Would change vegetative compositions, most likely increasing the number and variety of native plant species and displacing some introduced species.</p>	<p>Same as alternative A, except haying and grazing effects would be similar to alternative B and there could be greater vegetative communities and species diversity.</p>	<p>Same as alternative A, plus would significantly help a large number of migratory and resident birds, waterfowl, and waterbirds, as well as large ungulates and aquatic species. Would help disperse wildlife.</p>
<p>Habitat and Wildlife Management: Upland Habitat and Wildlife Goal—Manage and restore the diversity and composition of grassland and shrub-steppe habitats within the range of historical conditions for sagebrush-dependent species, upland nesting migratory birds, and other resident species.</p>			
<p>Upland habitats—actions</p>			
<p>Rely primarily on grazing and haying as habitat management tools.</p> <p>Protect sagebrush and grasslands from</p>	<p>Same as alternative A, plus restore sagebrush-steppe plant communities on suitable sites and remove center pivot irrigation</p>	<p>Same as alternative B, plus strive to enhance productivity of upland habitats for targeted wildlife species.</p>	<p>Same as alternative C, plus work with adjacent landowners, State and Federal agencies, and other partners to enhance and protect upland habitats</p>

Table 4. Summary of the alternatives and their environmental consequences for the comprehensive conservation plan for the Cokeville Meadows National Wildlife Refuge, Wyoming

<i>Alternative A (current management, no action)</i>	<i>Alternative B (hydrology and habitat restoration)</i>	<i>Alternative C (resource enhancement)</i>	<i>Alternative D (landscape-level management)</i>
<p>degradation to allow areas to recover.</p> <p>Farm small grains for several years to offset crop depredation and in preparation for restoring native grasslands.</p> <p>Methodically phase out alfalfa fields to allow uplands to revert to native vegetation.</p>	system.	<p>Haying and grazing would be more prescriptive than under alternatives A and B.</p> <p>Unlike under B, the center pivot irrigation system would not be removed.</p>	throughout the Bear River watershed in Wyoming.
Upland habitats—environmental consequences			
<p>Would improve the condition of upland habitats and increase bird habitat.</p> <p>Would increase wintering and nesting habitat for sage-grouse and other grassland and sage-dependent species.</p>	<p>Same as alternative A, plus native species composition would increase and help sage-steppe-obligate species.</p> <p>Would make more acres of native upland habitats available to wildlife.</p>	<p>Same as alternative B, plus would improve habitat for targeted species, which would also help other species that have similar life-cycle needs.</p>	<p>Same as alternative B, plus would cause less fragmentation and create more connectivity throughout the Bear River watershed in Wyoming, which would make better migration corridors for wildlife and decrease wildlife crowding.</p>
<p>Habitat and Wildlife Management: Riparian and River Habitats and Wildlife Goal—Maintain and, where appropriate, restore the processes necessary to sustain the biological diversity and integrity of riparian vegetation and aquatic habitats for breeding birds, native fishes, reptiles and amphibians</p>			
Riparian and river habitats—actions			
<p>Conduct haying and grazing.</p> <p>No restoration of native riparian habitat.</p> <p>Divert river water to irrigate wet meadows.</p> <p>No river water quality monitoring.</p> <p>Ground water wells would reduce ground water contributions to instream flows.</p>	<p>Restore natural processes of Bear River, work with partners to restore native game and nongame fish populations, especially the Bonneville cutthroat trout.</p> <p>Fence off and rest the riparian corridor from haying and grazing to promote regeneration of native woody vegetation.</p> <p>Restore a variety of native plant species and optimize them for migratory birds.</p>	<p>Same as alternative B, plus strive to enhance productivity of riparian and river habitats for all targeted wildlife species.</p> <p>Evaluate, replace, or upgrade water control structures.</p> <p>With partners, plant native woody species in riparian corridor.</p> <p>Expand fencing to exclusions and stock fencing.</p>	<p>Same as alternative C, plus work with State and Federal agencies, and other partners to enhance and protect riparian corridors and river habitats throughout the Bear River watershed in Wyoming.</p>
Riparian and river habitats—environmental consequences			
<p>Would continue the loss of woody plant community structure and change some areas to grass-dominated</p>	<p>Would help recover and restore native vegetation, especially woody species.</p> <p>Would greatly help</p>	Same as alternative B.	<p>Same as alternative B, plus could increase river shading and decrease river temperatures and</p>

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<p>communities, which would perpetuate a low diversity of neotropical migratory birds and remove shade necessary to support optimum river water temperatures.</p> <p>Would keep sediment loads in Bear River water at undesirable levels.</p>	<p>migratory bird populations, especially neotropical species that depend on native riparian vegetation to complete their life cycles.</p> <p>Would likely create greater bird diversity and population numbers.</p> <p>Would better shade the river, decreasing water temperatures and increasing oxygen content to help all forms of aquatic animal species.</p>		<p>sediment loads upstream and downstream of the refuge, allowing the water to hold more dissolved oxygen and helping native trout and other aquatic species.</p> <p>Would decrease fragmentation and help wildlife move and migrate through the watershed, increasing opportunities for wildlife-dependent recreational opportunities.</p>

Wildland Fire Management Goal—Manage wildland fires using a full array of strategic options from suppression to manipulating a fire to achieve benefits. Prescribed fire, manual and mechanical treatments will be used to: (1) reduce the threat to land and property through hazardous-fuel reduction treatments, and (2) meet the habitat goals and objectives identified in this CCP

Wildland fire management—actions

<p>Collaborate with State and Federal agencies and others to suppress wildfires on refuge lands.</p> <p>No prescribed fire.</p>	<p>Same as alternative A, plus revise the refuge’s FMP to allow prescribed fire.</p>	<p>Same as alternative B.</p>	<p>Same as alternative B, plus seek partnerships with the State and other Federal agencies and partners to accomplish fuels treatments throughout the Bear River watershed in Wyoming.</p>
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Wildland fire management—environmental consequences

<p>Would prevent damage to private and public properties in and around the refuge.</p> <p>Would deny refuge habitats the regenerative help derived from prescribed fires.</p>	<p>Would help prevent damage to private and public properties in and around the refuge.</p> <p>Would reinvigorate and regenerate refuge habitats and provide better opportunities for native vegetation to germinate and compete against nonnative species.</p>	<p>Same as alternative B.</p>	<p>Same as alternative B, plus would help prevent catastrophic wildfire events.</p>
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Table 4. Summary of the alternatives and their environmental consequences for the comprehensive conservation plan for the Cokeville Meadows National Wildlife Refuge, Wyoming

<i>Alternative A</i> (current management, no action)	<i>Alternative B</i> (hydrology and habitat restoration)	<i>Alternative C</i> (resource enhancement)	<i>Alternative D</i> (landscape-level management)
Visitor Services and Cultural Resources Goal —Provide appropriate public access to refuge lands where visitors can safely enjoy compatible, wildlife-dependent recreation, such as hunting, fishing, wildlife observation, photography, environmental education, and interpretation. The refuge will seek partnerships to help protect onsite cultural resources.			
Public access—actions			
The refuge would be closed to the public except at the visitor contact station, information kiosk, and walking trail at the Netherly Slough.	Expand opportunities for wildlife-dependent recreation. Add vehicle access point or parking lot on both east and west sides of the refuge and open portions of the Bear River with seasonal closures and spatial zoning.	Same as alternative B, but there would be more access points into the refuge than in alternative B. Prepare a stepdown visitor services plan.	Same as alternative C, plus develop more ecotourism activities in the area around the refuge. Work with partners to expand opportunities throughout the Bear River watershed. Work with the town of Cokeville, Lincoln County, and others to move the annual Wyoming State junior duck stamp competition to Cokeville.
Public access—environmental consequences			
Negative public perceptions of the refuge and the Service would continue. Wildlife would benefit from being sheltered from visitors.	Negative public perceptions of the refuge and the Service would be reduced. Wildlife would more often be disturbed.	Same as alternative B, but more wildlife could be disturbed by visitors.	Same as alternative C, though positive environmental effects would extend outside the refuge to the Bear River watershed in Wyoming.
Visitor safety—actions			
Refuge would remain closed to visitors.	Increase staff and partnerships as parts of refuge are opened. Increase infrastructure needed to ensure safety.	Same as alternative B.	Same as alternative B.
Visitor safety— environmental consequences			
Would be little impact.	Would incur greater workload and partner needs. May affect refuge habitats.	Same as alternative B.	Same as alternative B.
River boating—actions			
Boating would not be allowed.	Nonmotorized boating in the refuge portions of the Bear River would be allowed seasonally.	Same as alternative B.	Same as alternative B.

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River boating— environmental consequences			
Would be no impact.	Negative public perceptions of the refuge and the Service would be reduced. Wildlife would more often be disturbed.	Same as alternative B.	Same as alternative B.
Hunting—actions			
Hunting would not be allowed.	If the draft hunt plan and EA released in December 2012 is approved, would open the refuge to big game, small game, and migratory bird hunting.	Same as alternative B, plus more infrastructure development.	Same as alternative C.
Hunting—environmental consequences			
Would prolong negative attitudes toward the refuge and Service and deny any possible economic benefits. Would prolong the comingling issue between large ungulates and cattle, which could result in wildlife diseases passing on to cattle and result in economic loss for our neighbors.	If hunting is allowed, it would attract new visitors, reduce negative attitudes toward the refuge and the Service, improve local and State economies, and reduce comingling the and possible transmission of wildlife diseases to cattle.	Same as alternative B.	Same as alternative B, however the positive environmental effects would extend outside the refuge boundaries to the Bear River watershed in Wyoming.
Fishing—actions			
The refuge would be closed to fishing.	Develop a fishing plan and open some areas of the refuge to fishing in accordance with State regulations and calendar. Portions of the Bear River would be open seasonally to the use of non-motorized boats.	Same as alternative B, plus more infrastructure development.	Same as alternative C
Fishing—environmental consequences			
Would prolong negative attitudes toward the refuge and Service and deny any possible economic benefits.	Would attract new visitors, reduce negative attitudes toward the refuge and the Service, and improve local and State economies.	Same as alternative B.	Same as alternative B.

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Trapping—actions			
Trapping would not be allowed, but would be evaluated and may be allowed later.	Limited opportunities might exist for the recreational harvest of furbearing animals on the refuge under the right conditions and given management needs.	Same as alternative B.	Same as alternative B.
Trapping—environmental consequences			
Would perpetuate an unfavorable image of the Service and the refuge.	Would minimally affect wildlife populations and refuge habitats, but would greatly alleviate negative perceptions of the refuge and the Service.	Same as alternative B.	Same as alternative B.
Wildlife observation and photography—actions			
Limit to the short walking trail at Netherly Slough.	Open more areas.	Same as alternative B, plus more infrastructure development.	Same as alternative C
Wildlife observation and photography—environmental consequences			
Would prolong negative attitudes toward the refuge and Service and deny any possible economic benefits. Wildlife would be sheltered from most disturbances.	Would attract new visitors, reduce negative attitudes toward the refuge and the Service, and improve local and State economies.	Same as alternative B.	Same as alternative B.
Environmental education and interpretation—actions			
Provide occasional, opportunistic environmental education as staff duties allow. Limit interpretation to existing kiosk near Netherly Slough.	Same as alternative A, plus: The staff would develop and make available to the public a general refuge brochure and a species list.	Same as alternative B, plus more infrastructure development.	Same as alternative C, plus environmental education and interpretation would be presented with a focus on the ecology of the Bear River watershed.
Environmental education and interpretation—environmental consequences			
Would deny local schools and visitors opportunities to learn about the Service’s and the Refuge System’s missions and the natural environment at the refuge, which could reduce opportunities for volunteerism or student	Would reduce negative attitudes toward the refuge and the Service and increase support for our mission and that of the Refuge System, the goals of this CCP, and the purposes of the refuge. Interest in natural	Same as alternative B.	Same as alternative B, but with expanded opportunities for the public and enhanced support for the conservation of natural resources throughout southwest Wyoming.

Table 4. Summary of the alternatives and their environmental consequences for the comprehensive conservation plan for the Cokeville Meadows National Wildlife Refuge, Wyoming

<i>Alternative A (current management, no action)</i>	<i>Alternative B (hydrology and habitat restoration)</i>	<i>Alternative C (resource enhancement)</i>	<i>Alternative D (landscape-level management)</i>
interest in conservation efforts and in biological careers. Would limit wildlife disturbance.	resources, conservation efforts, and related careers among refuge visitors would increase.		
Public information—actions			
Make available at the refuge office and at the Seedska-dee National Wildlife Refuge office. Produce a general information brochure. Provide more information at Seedska-dee National Wildlife Refuge’s Web site	Same as alternative A, plus produce leaflets with hunting, fishing, boating, wildlife observation, photography information and a species list.	Same as alternative B.	Same as alternative B, plus work with partners to provide visitors with information on public hunting, fishing, boating, wildlife observation, photography opportunities throughout the Bear River watershed in Wyoming.
Public information—environmental consequences			
Would limit opportunities to inform and educate visitors.	Same as alternative A, but would create a more inviting atmosphere for visitors and increase public awareness and interest in wildlife and habitat needs, which may result in increased revenues for local and State economies.	Same as alternative B.	Same as alternative B.
Cultural resources—actions			
Identify and protect cultural resources through the right surveys and consult with the Wyoming State Historic Preservation Office before disturbing the ground.	Same as alternative A	Same as alternative A.	Same as alternative A.
Cultural resources—environmental consequences			
Would be protected from unintended disturbance, destruction, vandalism and theft.	Same as alternative A.	Same as alternative A.	Same as alternative A.

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Partnerships Goal —Engage in mutually beneficial partnerships to promote wildlife and habitat conservation, and public enjoyment of wildlife resources in the upper Bear River watershed that are consistent with historic land uses, refuge purposes and goals.			
Partnerships—actions			
<p>Work with our Partners for Fish and Wildlife Program, WGFD, Wyoming Landscape Conservation Initiative, Lincoln County, neighboring landowners, and others to conserve wildlife and wildlife habitat both on and off the refuge—limited, however, by the availability of resources and our lack of refuge staff.</p> <p>Work with third-party researchers to allow them to obtain information about wildlife and habitats on the refuge.</p> <p>Engage with project proponents, third-party mineral owners, local units of government, and regulatory or permitting agencies about proposed mineral developments and utility and transportation corridor projects.</p>	Same as alternative A.	Same as alternative A.	<p>Same as alternative A, plus work with State and Federal agencies and other partners to strengthen existing, and to develop new, partnerships to carry out objectives throughout the Bear River watershed in Wyoming.</p> <p>Seek partners in the private sector to establish a refuge Friends group.</p>
Partnerships—environmental consequences			
<p>Would provide resources to contain invasive species infestations and damage to property from wildfire, which would provide better conditions for habitats and wildlife.</p> <p>Would help us find wildlife use, population trends, and habitat conditions, which would allow us to manage refuge resources better.</p>	Same as alternative A.	Same as alternative A.	Same as alternative A, but expand to areas throughout the Bear River watershed in Wyoming.

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Landscape conservation—actions			
We would not be able to take part in landscape conservation efforts. We would concentrate on habitat and wildlife conservation activities within the refuge boundary.	Same as alternative A.	Same as alternative A.	Expand existing partnerships and find new partners to support land enhancement and protection projects on and off the refuge. Coordinate with local governments and agencies to see if any private land development proposals that might affect refuge and other habitats of high value for wildlife throughout the Bear River watershed in Wyoming. Use new extension biologist to plan and carry out conservation actions to conserve wildlife across the landscape.
Landscape conservation—environmental consequences			
Would limit our ability to work with partners to keep habitat connectivity outside of the refuge.	Same as alternative A.	Same as alternative A.	More resources would be available for habitat enhancement and protection that would help wildlife and wildlife-related recreation. Enhancing and preserving wildlife migration corridors would increase the genetic exchange between wildlife populations and their access to adequate food sources, which would improve their reproductive success and survival.
Refuge Development and Operations Goal —Effectively utilize all available resources to develop, enhance, and support refuge facilities and operations for wildlife, habitat, and public use programs. We will pursue easements and other land protection opportunities with willing sellers within the approved refuge acquisition boundary.			
Staff—actions			
Refuge would be unmanned. Seedska-dee Refuge Complex staff would travel to the refuge to carry out all necessary	Add one full-time, on site, wildlife refuge specialist, one full-time biological technician, one career seasonal (six month)	Same as alternative B.	Same as alternative B, plus add a full-time extension biologist.

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habitat management actions and support all infrastructure.	biological technician.		
Staff—environmental consequences			
Would not be sufficient to conduct the refuge programs and achieve its goals. Would need to rely on partners and cooperators to accomplish refuge management activities.	Would increase management capabilities within the refuge boundary.	Same as alternative B.	Same as alternative B, plus would increase management capabilities throughout the Bear River watershed in Wyoming.
Facilities—actions			
Support key operational and visitor services infrastructure.	Same as alternative A, plus create at least two safe access points and parking facilities (one on the east and one on the west side of the refuge) for refuge visitors and canoe slips and launch and take out sites for non-motorized boats. Remove most or all the refuge’s water delivery system infrastructure.	Same as alternative A, plus: The staff would upgrade and support the water delivery infrastructure to better manage and optimize all refuge habitats for target species. The staff would increase the number of access points and other infrastructure (from those in alternative B) necessary to provide the public with compatible, wildlife-dependent recreational opportunities, such as: <ul style="list-style-type: none"> • A new auto tour route. • A walking trail along the Bear River. • A wildlife-observation and photography blind. • An outdoor classroom. 	Same as alternative C, plus: The staff would seek partners to work with in the design and development of an interpretive tour route and a regional birding trail in the Bear River Valley of Wyoming.
Facilities—environmental consequences			
Supported water delivery system infrastructure allows the staff to manage the wet meadows and wetlands by providing the necessary water to create conditions conducive for migratory birds and resident wildlife.	Removal of the refuge’s water delivery infrastructure would subject wet meadow and wetland habitats to more cyclical water regimes mimicking those found at the refuge before the area was settled. This could potentially help native	Same as alternative A, but focusing the management actions on the needs of targeted species would allow the staff to optimize refuge habitats to help a greater variety of wildlife and plant species. Increasing the number,	Same as alternative C, but visitors to the refuge would be afforded sufficient resources and information to allow them to expand their outdoor recreational and educational opportunities to the refuge and many sites throughout the Bear River watershed in

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Maintenance of the kiosk, wildlife observation trail, headquarters, and parking lots provide means for the visitors to enjoy the refuge and obtain information and services at refuge facilities.	vegetation better compete against nonnatives. Access points and boat and canoe launch sites would increase the possibility for public enjoyment and of wildlife disturbance.	variety, and distribution of infrastructure and access points into the refuge would expand the range of possibilities for the public to enjoy the refuge’s habitats and wildlife.	Wyoming.
Water rights—actions			
Assess the full breath of our water rights in coordination with our regional hydrologists and the Wyoming State Engineers Office. Divert and use, in accordance with the our adjudicated water rights and applicable laws and compacts, all the water to which we are entitled.	Same as alternative A.	Same as alternative A.	Same as alternative A.
Water rights—environmental consequences			
Incomplete understanding of the refuge’s water rights may curtail our ability to manage refuge habitats more comprehensively. A full understanding and assessment of our water rights could help the refuge provide better habitats.	Same as alternative A.	Same as alternative A.	Same as alternative A.
Water management—actions			
Support habitats and protect refuge water rights. Improve delivery systems.	Reduce water management through the removal of dikes and structures.	Improve water delivery systems.	Same as alternative C, but may use refuge water rights to help in the restoration of habitats for wildlife watershed wide in Wyoming.
Water management—environmental consequences			
Improve annual maintenance and operations.	Shift work to other activities such as public use. Reduce the level of water management required on the refuge. May put water rights in jeopardy, a change of use	Would better achieve habitat management targets with greater accuracy and success, creating better habitat conditions for native plants and wildlife.	Same as alternative C, plus positive environmental effects may extend outside the refuge boundaries to the Bear River watershed in Wyoming.

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	for refuge water rights might be needed. Cyclical water regimes may help native vegetation better compete against nonnatives.	Improved habitat and wildlife would lead to better outdoor recreational experiences and greater visitation, resulting in greater expenditures on outdoor recreation gear and services as a boost to local and State economies.	
Land protection—actions			
Protect wildlife habitats within the refuge’s approved acquisition boundary and buy lands in fee title or pursue conservation easements on private property from willing landowners as money and opportunities arise.	Same as alternative A.	Same as alternative A.	Same as alternative A, plus work with partners to encourage ways to protect lands and habitats of high value for wildlife, fishes, reptiles, amphibians, insects throughout the Bear River watershed in Wyoming.
Land protection—environmental consequences			
As more lands came under Service management: <ul style="list-style-type: none"> • Fragmentation of wildlife habitat would decrease, increasing wildlife habitat connectivity. • The staff could improve management efficiency. • There would be more land for the public to enjoy wildlife-dependent recreational opportunities once the refuge was opened. 	Same as alternative A.	Same as alternative A.	Same as alternative A
Inventory, monitoring, and research—actions			
Rely on partners and other agencies to conduct limited wildlife monitoring. Gather population data on federally listed and candidate species and State species of concern on the	The biological monitoring program would be much more extensive than under alternative A. Develop a habitat management plan and an inventory and monitoring	Same as alternative B.	Same as alternative B, plus work with State and Federal agencies and other partners to find ways to extend the research and monitoring of river water quality and of wildlife and

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refuge as opportunities arise.	plan. Expand the invasive species monitoring partnership with Lincoln County Weed and Pest Department to include aquatic invasive species.		their habitats throughout the Bear River watershed in Wyoming.
Inventory, monitoring, and research—environmental consequences			
Lack of a more methodical and broad monitoring activities would negate the staff the most correct and timely information to help avoid adverse effects to or better address the needs of species of concern.	Development of these plans and implementation of a methodical research and monitoring program would allow the staff and its partners the possibility for better management of the refuge habitats and wildlife, and the means to better respond to and control the spread of invasive species.	Same as alternative B.	Same as alternative B, plus more data would be available about the refuge and its surrounding wildlife habitats throughout the Bear River watershed in Wyoming.
Nuisance animals and predator control—actions			
Controlling predators and nuisance animals on refuge lands in accordance with our regional guidance.	Identify nuisance animals and take steps to reduce the damage or allow others to do it, such as an agency like Animal and Plant Health Inspection Services (APHIS).	Same as alternative B.	Same as alternative B.
Nuisance animals and predator control—environmental consequences			
No adverse effect on the environment. Should help alleviate the negative perception of some in the local community have about the Service and the refuge.	Same as alternative A.	Same as alternative A.	Same as alternative A.
Socioeconomics—environmental consequences			
Visitor contributions to the local and State economies would be small, and a negative image of the refuge and the Service may continue.	Visitation and local and State revenues would increase, especially because of outdoor recreational opportunities.	Same as alternative B.	Similar to alternative B, but increased to affect the entire Bear River watershed in Wyoming.

